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# Mu2e Facility

Master Planning Meeting

4/4/11

R. Ray  
Mu2e Project manager

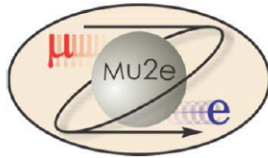
# Mu2e Site

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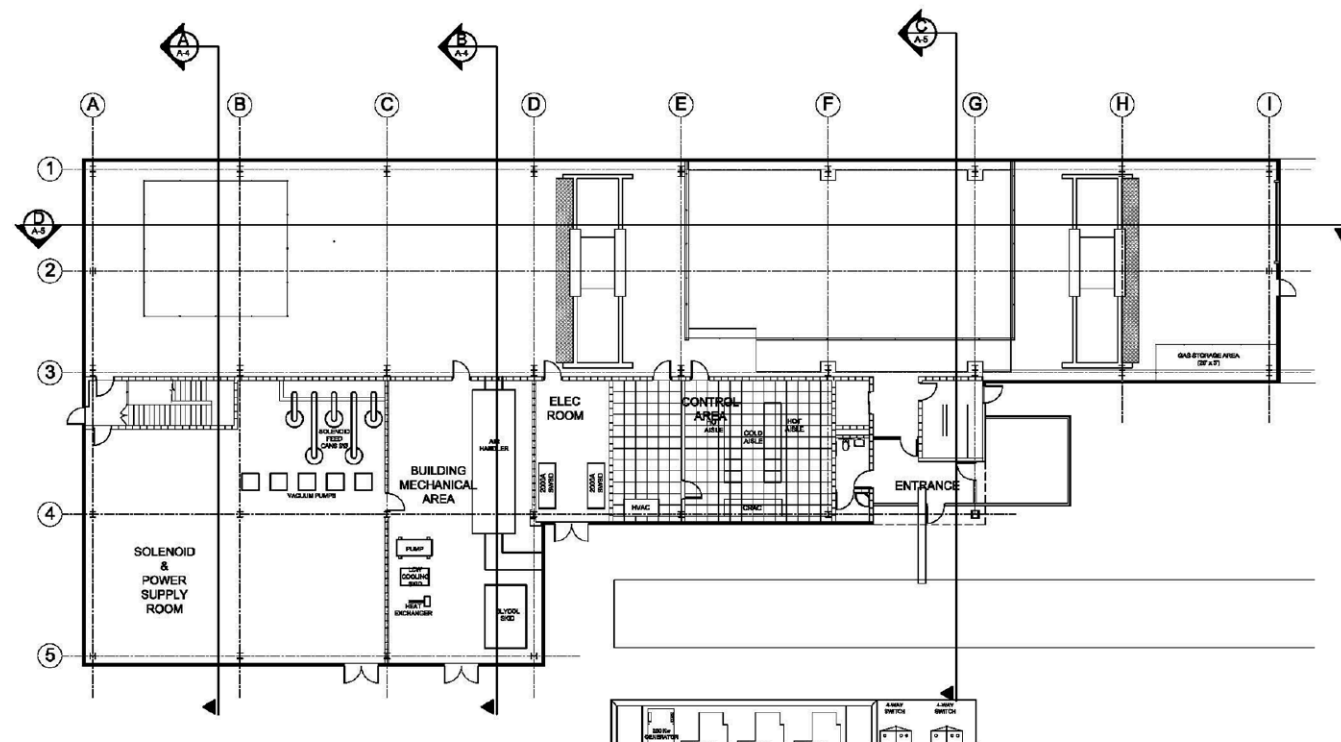


R. Ray - Mu2e WGM

# Surface Building



## Grade Level



**ENLARGED FLOOR PLAN ELEV 746'-6"**  
SCALE: 3/16"=1'-0"  
R. Ray - Mu2e WGM



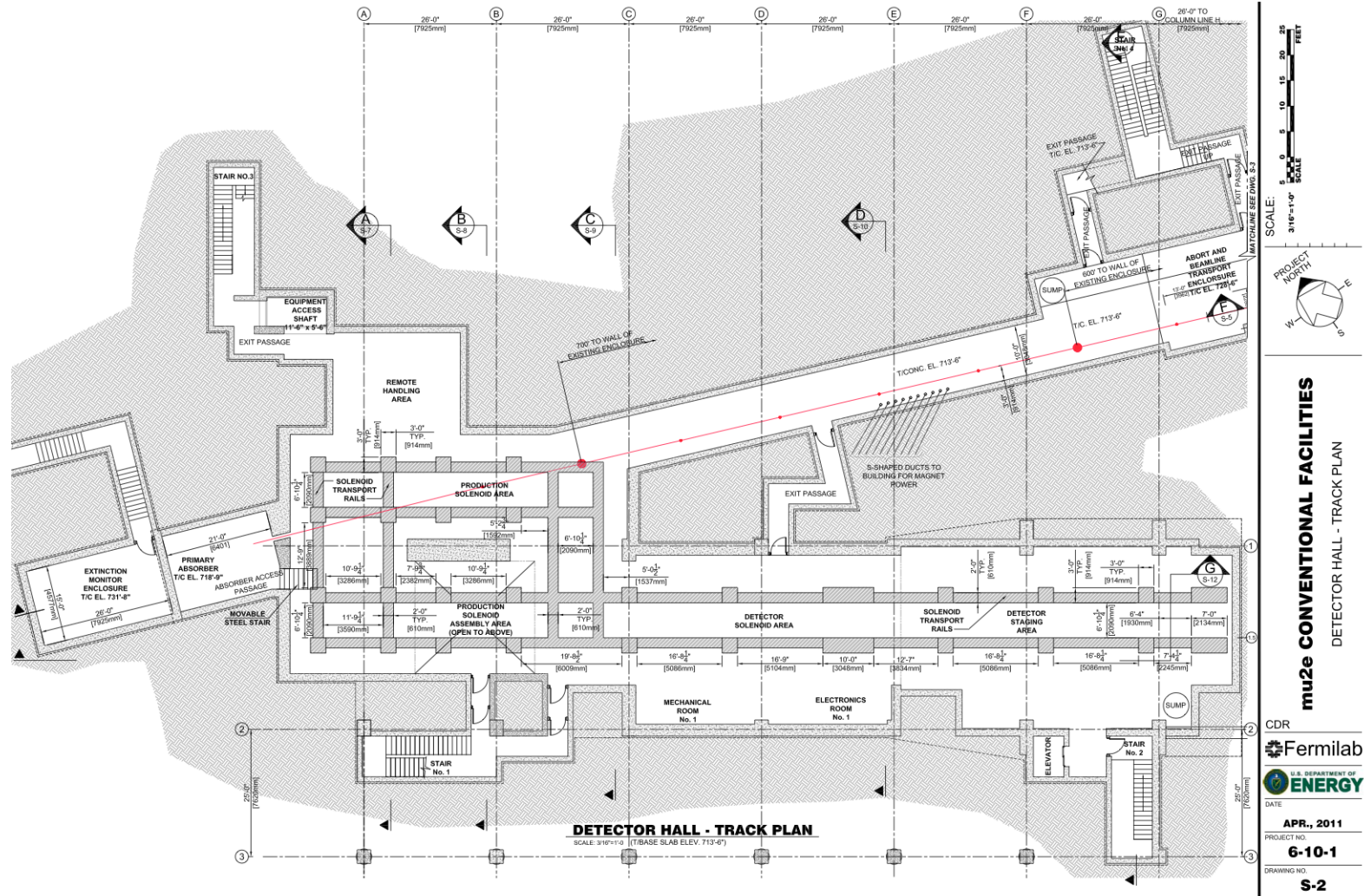


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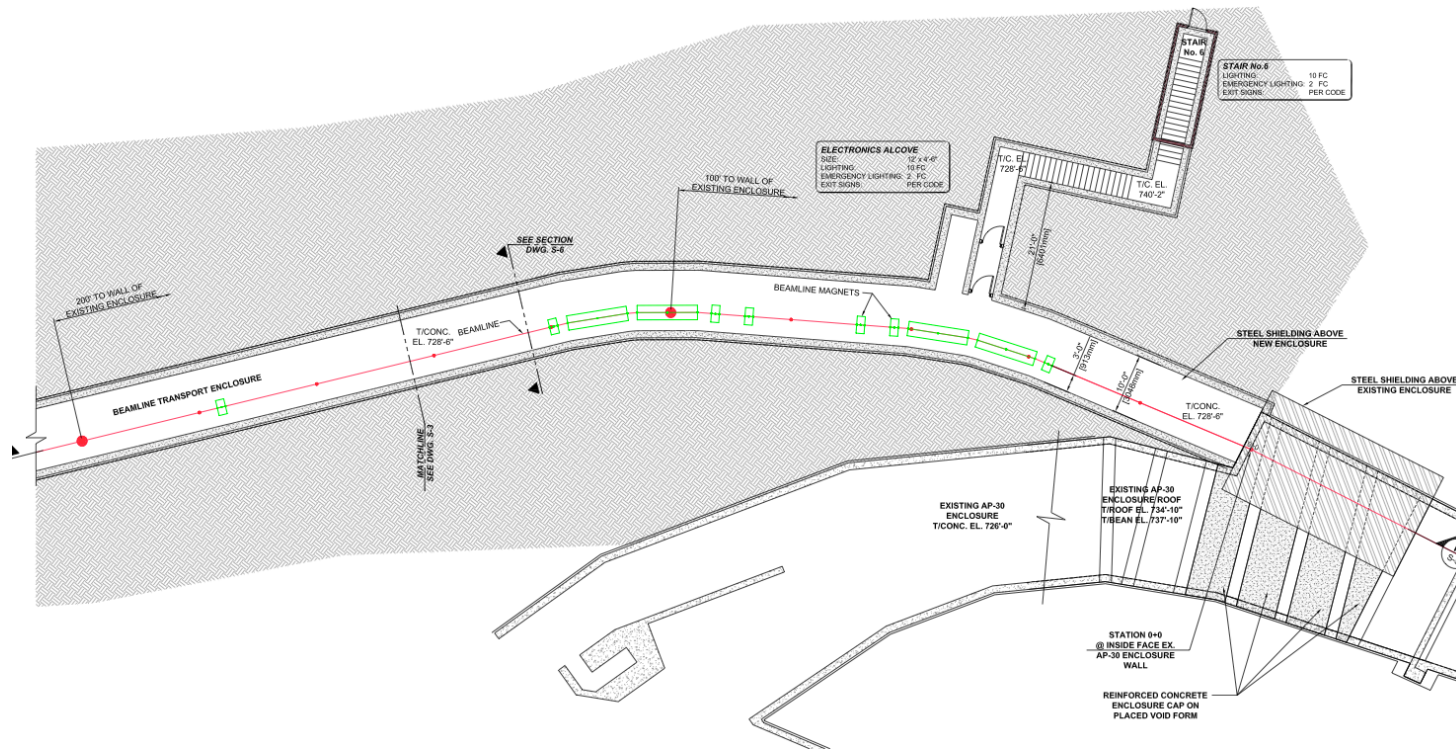


# Rails



R. Ray - Mu2e WGM

# Connection to Pbar



## BEAM TRANSPORT ENCLOSURE - PLAN

SCALE: 3/16"=1'-0" (T/BASE SLAB ELEV. 728'-6")

### BEAMLINE TRANSPORT ENCLOSURE

DIMENSIONS:	10' WIDE BY 8' HIGH	LOW:	NEW LOW SYSTEM TO SERVE THE BEAMLINE
CONSTRUCTION:	CONCRETE	MAGNETS:	
FUNCTION:	TRANSPORT 8 GEV BEAM FROM PBAR	OCCUPANT LOAD:	LESS THAN 90
SHIELDING:	UNLIMITED OCCUPANCY - 21 FEET PROVIDED	EGRESS:	300 FOOT MAXIMUM TRAVEL DISTANCE TO STAIRWAY, STAIRWAY FIRE RATED CONSTRUCTION DISCHARGE TO SURFACE EMERGENCY LIGHTING AND EXIT SIGNAGE THROUGHOUT SMOKE PROOF STAIRWAYS
EQUIPMENT ACCESS:	VIA HATCH NEAR ABSORBER ACCESS SHAFT	SMOKE CONTROL:	EMERGENCY PERSONNEL MANUAL ACCESS
HVAC:	60 DEGREE F MIN	FANS FOR SMOKE ABATEMENT:	
HUMIDITY CONTROL:	NONE	FIRE DETECTION:	AIR SAMPLING SMOKE & LINEAR TYPE HEAT DETECTION
PURGE (ODH) VENTILATION:	NONE	FIRE NOTIFICATION:	AUDIBLE AND VISUAL DEVICES THROUGHOUT

SCALE:  
3/16"=1'-0"



## mu2e CONVENTIONAL FACILITIES BEAM TRANSPORT ENCLOSURE PLAN - SHEET 2

CDR

Fermilab

U.S. DEPARTMENT OF  
**ENERGY**

DATE

APR., 2011

PROJECT NO.

6-10-1

DRAWING NO.

S-4

R. Ray - Mu2e WGM

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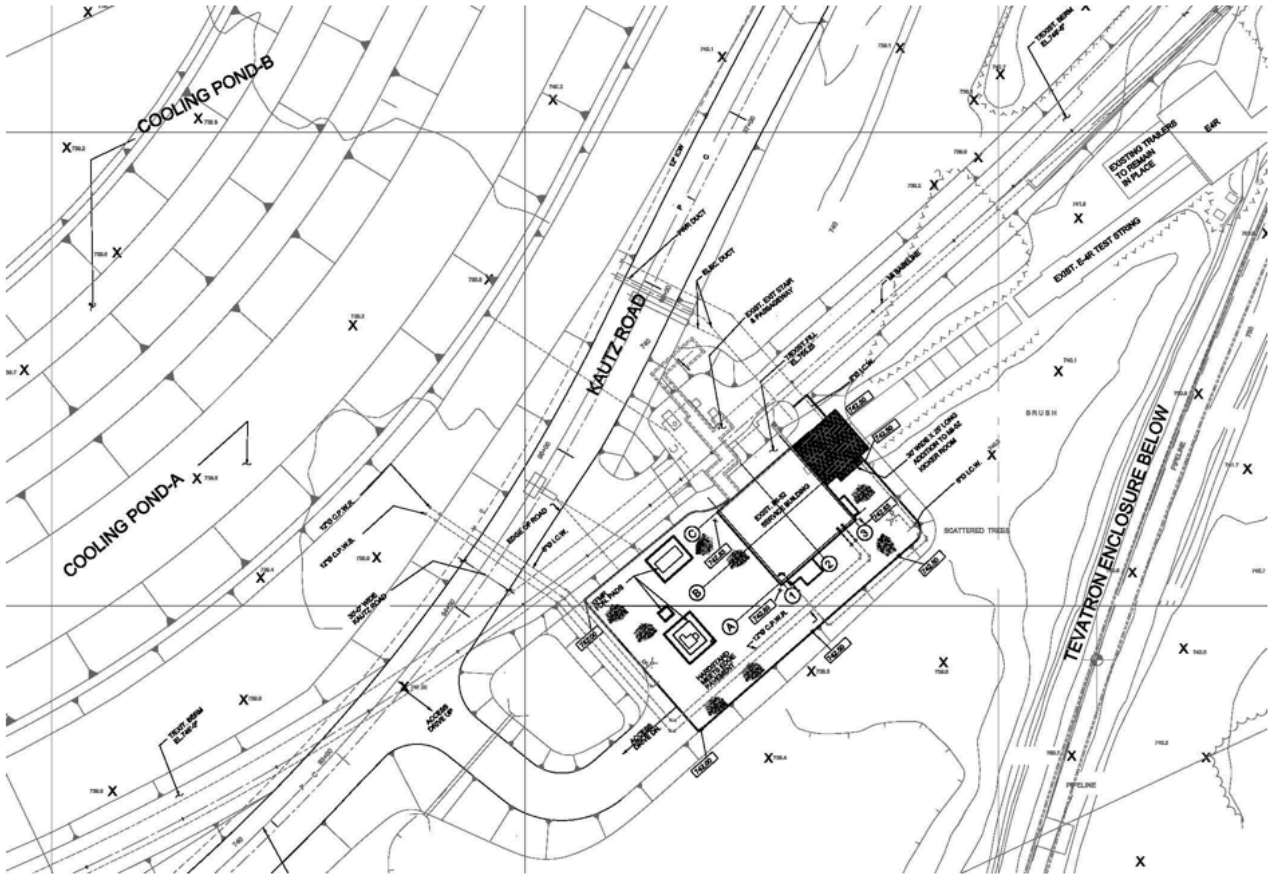








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# Site Utilities

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## **Roads and Hardstands**

- 800LF of removed Kautz Road
- 1400LF of new Kautz Road
- 350 LF of new Well Pond Road
- 350LF of new Access Road
- 15,000SF of Parking and Hardstand

## **Piped Utilities**

- 1,085 LF DWS
- 525 LF Sanitary Sewer
- 1085 LF 10" ICW
- 550 LF 6" ICW
- 1370 LF Chilled Water S&R

## **Electrical Power**

- Three feeders from MSS:
- 16,700 new 15KV cable
- 5 new configuration switches
- 6 new -1500KVA Transformers
- Electrical / Comm. Duct Bank  
1250 LF



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## **Environmental**

- Flood Plain and Wetland delineation is complete.
- The project will disturb low grade wetlands.
- Pursuing Wetland Assessment to apply for CX Determination.
- Corp of Engineer “Wetland” permit has been initiated

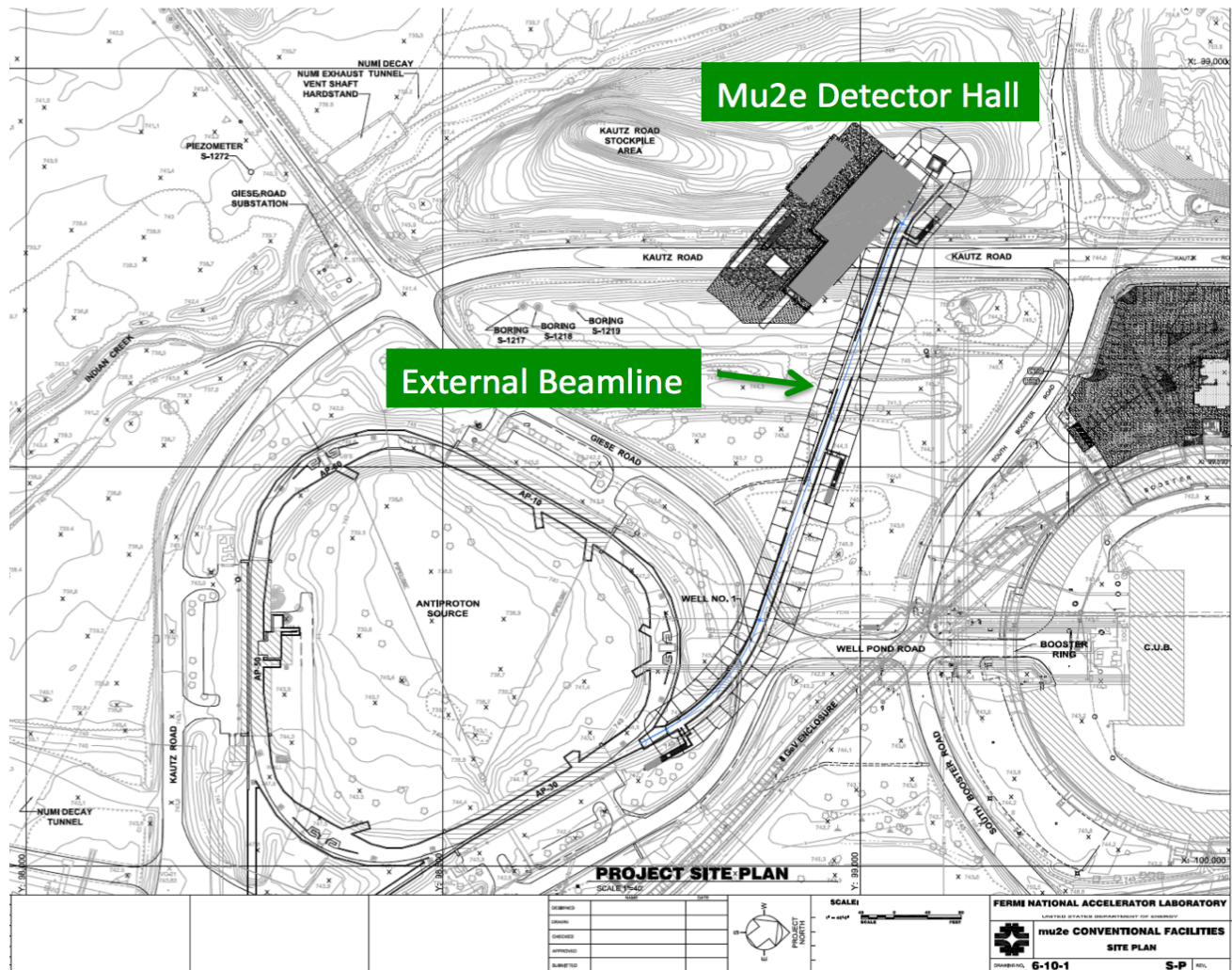
## **Sustainability**

- Pursuing DOE Exemption LEED Gold Certification
- Will Comply with Guiding Principles.

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# Backup Slides

# Why does the building have to go in the middle of a road?







# Constraints

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There are several factors that come into play when considering the location of Mu2e:

- Where can we connect to the Debuncher Ring?
- Beam requirements for the AC Dipole
- Wetlands and Indian Creek.

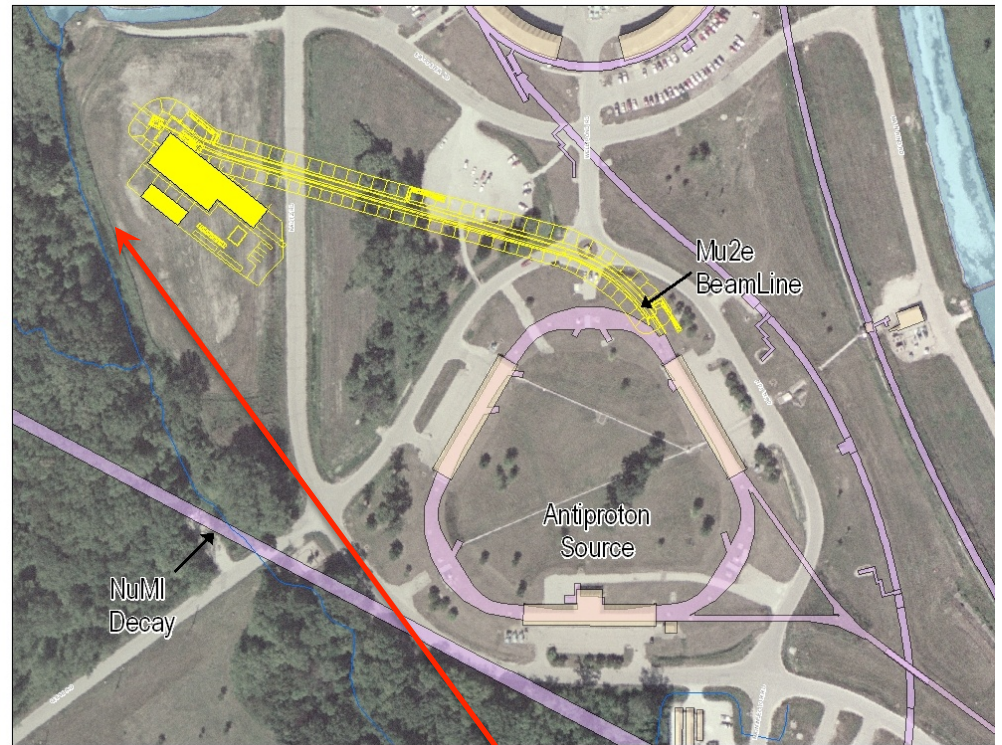
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- This topographic map depicts the Kautz Road area, including the Kautz Road Stockpile Area, Kautz Road, and a Dump. Key features include:
- NUM DEACY**, **MI EXHAUST TUNNEL**, **ENT SHAFT**, and **ARDSTAND** in the upper left.
  - KAUTZ ROAD STOCKPILE AREA** and **KAUTZ ROAD** in the upper center.
  - BORING S-1217**, **BORING S-1218**, and **BORING S-1219** in the center.
  - KAUTZ ROAD** and **DUMP** in the center-right.
  - AP-10** and **AP-11** in the lower left.
  - ANTIPROTON SOURCE** in the lower left.
  - WELL NO. 11** in the center.
  - WELL POND ROAD** in the lower center.
  - BOOSTER RING** in the lower right.
  - C.U.B.** in the lower right.
  - BEAM E-732-6"** in the lower left, circled in red.
- The map also shows various contour lines, roads, and other geographical features.



# Length of beamline

- An AC dipole, located in the external beamline, is required to extinguish beam between pulses that can cause background.
- Significant optics is required to properly prepare the beam for the AC dipole.
  - Large betatron function in the bend plane
- This is very advanced optics. Not a simple transfer line.
- Also not a gold plated beam line. We don't cancel the derivative of the dispersion at the target, something we would do if we had more space.

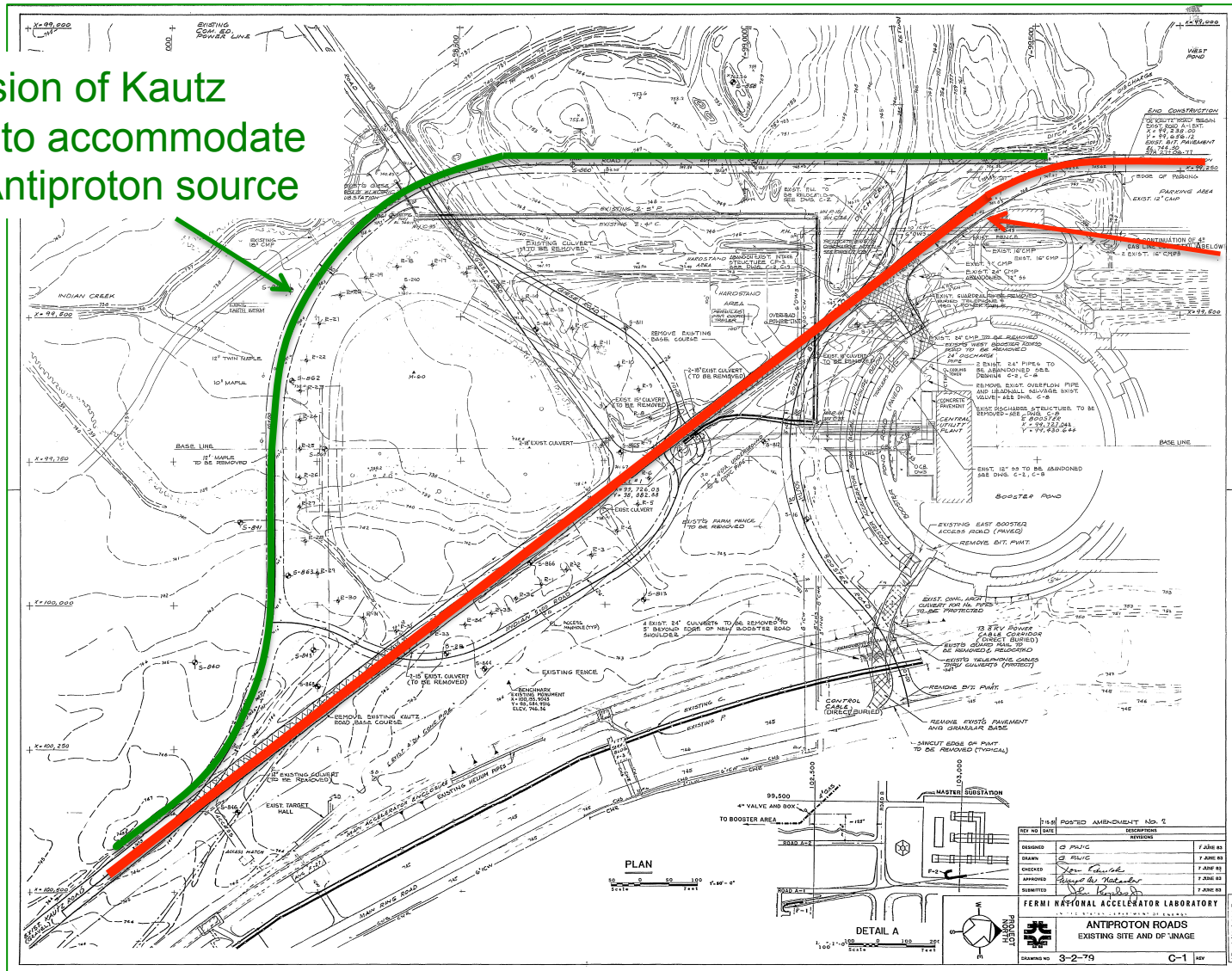






# Precedent for diversion of Kautz Road

Diversion of Kautz Road to accommodate new Antiproton source



Original Kautz Road